

WHAT IS CLAIMED IS:

1. A surface acoustic wave device using second leaky surface acoustic waves having a dominant component which is a longitudinal wave component, the device comprising:
 - a LiTaO_3 substrate; and
 - a conductive film disposed on the LiTaO_3 substrate,
wherein the density ρ of the conductive film is in the range of about 2,699 kg/m^3 to about 19,300 kg/m^3 .
2. The device according to claim 1, wherein the normalized thickness H/λ of the conductive film is within the range of about $5.3023 \times \rho^{-0.4172}$ to about $80161 \times \rho^{-1.781}$ wherein λ represents the wavelength of the second leaky surface acoustic waves and H represents the thickness of the conductive film.
3. The device according to claim 1, wherein the Euler angle of the LiTaO_3 substrate is in regions B1 to B4 shown in Figs. 8 to 11.
4. The device according to claim 1, wherein the conductive film comprises at least one of copper and silver.
5. A surface acoustic wave device using second leaky surface acoustic waves the dominant component of which is a longitudinal wave component, the device comprising:
 - a LiTaO_3 substrate having an Euler angle within regions A1 to A10 defined by connecting the coordinates shown in Tables 1 and 2; and
 - a conductive film disposed on the LiTaO_3 substrate,
wherein the density ρ of the conductive film is greater than about 2,699 kg/m^3 and the normalized thickness H/λ of the conductive film is within the range of about $5.3023 \times \rho^{-0.4172}$ to about $80161 \times \rho^{-1.781}$ wherein λ represents the wavelength of

the second leaky surface acoustic waves and H represents the thickness of the conductive film:

Region	Coordinates	θ	ψ
A1	P1	16.2	63.7
	P2	69.9	63.7
	P3	69.9	116.3
	P4	16.2	116.3
	P5	16.2	63.7
A2	P1	106.2	118.7
	P2	143.6	118.7
	P3	143.6	151.4
	P4	106.2	151.4
	P5	106.2	118.7
A3	P1	106.2	28.6
	P2	143.6	28.6
	P3	143.6	61.3
	P4	106.2	61.3
	P5	106.2	28.6
A4	P1	16.5	55.9
	P2	72.3	55.9
	P3	72.3	108.0
	P4	16.5	108.0
	P5	16.5	55.9
A5	P1	106.2	131.3
	P2	124.0	131.3
	P3	124.0	148.0
	P4	106.2	148.0
	P5	106.2	131.3

Table 1

Table 2

Region	Coordinates	θ	ψ
A6	P1	106.3	30.8
	P2	153.1	30.8
	P3	153.1	71.7
	P4	106.3	71.7
	P5	106.3	30.8
A7	P1	17.4	48.5
	P2	76.8	48.5
	P3	76.8	99.4
	P4	17.4	99.4
	P5	17.4	48.5
A8	P1	104.6	35.6
	P2	158.0	35.6
	P3	158.0	81.3
	P4	104.6	81.3
	P5	104.6	35.6
A9	P1	19.1	41.7
	P2	78.3	41.7
	P3	78.3	90.4
	P4	19.1	90.4
	P5	19.1	41.7
A10	P1	101.7	41.7
	P2	161.0	41.7
	P3	161.0	90.4
	P4	101.7	90.4
	P5	101.7	41.7

6. The device according to claim 5, wherein the conductive film comprises at least one of copper, silver, and gold.

7. A surface acoustic wave device according to claim 1, wherein the conductive film defines at least one of an interdigital transducer and a grating reflector.